

**ABSTRACT**

An electronic color image capture system includes an optical section for separating an input image into its separate color content and directing the separate color content toward an imaging section, which generates a plurality of color image signals from the input image. The spectral responses of the optical section and the imaging section are selected so as to cascade together to provide all-positive, symmetrical system curves modeled upon red, green and blue color matching functions representative of the human visual system. The color matching functions are derived from three monochromatic light sources and contain no more than three positive lobes as well as one or more negative lobes, wherein the areas under the color matching functions determined by (a) summation of all negative lobes and (b) overlap between the green and red color matching functions are minimized. The color image signals are processed with a color correction matrix with coefficients optimized for signal-to-noise performance for producing an output color image exhibiting an accurate color reproduction of the input image.